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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,305	02/07/2002	Boris A. Maslov	57357-019	7098

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McDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

NGUYEN, HANH N

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 11/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/067,305

Applicant(s)

MASLOV ET AL.

Examiner

Nguyen N Hanh

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

(1) each axial row comprises a center permanent magnet of one magnetic polarity and, at each axial side thereof, a lateral permanent magnet of a magnetic polarity opposite to the polarity of the center magnet, as in claim 8;

(2) the magnetic polarities of the permanent magnets of each successive row in the circumferential direction are of alternate magnetic polarity, as in claim 9.

(3) a nonmagnetic outer ring within which the permanent magnets and back iron are housed, as in claims 13 and 25.

(4) each back iron segment comprises two separated segment portions, each segment portion bridging the center permanent magnet and a respective lateral permanent magnet of the corresponding axial permanent magnet row, as in claim 16.

(5) each permanent magnet is a magnetic dipole having one magnetic polarity at a surface at the air gap and the opposite magnetic polarity at a surface facing the back iron ring, as in claims 17 and 28.

(6) adjacent permanent magnets are in contact with each other, as in claim 18.

(7) each back iron segment comprises two separated segment portions, each segment portion bridging the center permanent magnet and a respective lateral

permanent magnet of the corresponding axial permanent magnet row, as in claims 16 and 27.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. Claims 13 and 25 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "a nonmagnetic outer ring within which the permanent magnets and back iron ring are housed" in claim 13 was not described in the specification. Under the light of the specification, the Examiner interprets the non-magnetic outer ring as a rim to support the magnets.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3,5-9,21,22,24 are rejected under 35 U.S.C. 102(b) as being anticipated by Nolle.

Regarding claim 1, Nolle discloses a stator (10 in Fig. 1) comprising a plurality of separate integral electromagnet core segments (110, 120, 130 in Fig. 2) disposed coaxially about an axis of rotation to form an annular cylindrical stator ring bounded by an inner and outer diameter, each core segment comprising a center pole (11b in Fig. 1) and two lateral poles (11a and 11c), the center pole integrally joined on each axial side thereof by a linking portion (Fig. 1) to a respective lateral pole to form an axial row of stator poles; and a cylindrical annular permanent magnet rotor (20) concentric with the stator and separated therefrom by a radial air gap.

Regarding claim 3, Nolle also discloses rotary electric motor wherein each of the stator poles has a pole face surface area at the radial air gap (Fig. 1 and 2); and each stator core segment further comprises: a winding (15,16,17 in Fig. 1) formed on each linking portion and connected to develop, when energized with current, one magnetic polarity in each of the lateral poles and an opposite magnetic polarity in the center pole (inherent because the polarity of each stator poles is opposite to the polarity of the rotor poles in Fig. 1 for the rotor to rotate), and wherein reversal of direction of current flow through the windings effects reversal of magnetic polarities of the poles (inherent).

Regarding claim 5, Nolle also discloses rotary electric motor wherein the plurality of stator core segments have substantially the same pole configurations (Fig. 2).

Regarding claim 6, Nolle also discloses rotary electric motor wherein the core segments are structurally positioned to form two annular sets of lateral poles and one annular set of center poles (Fig. 1 and 2), each set comprising a respective pole in each

of the core segments; and the poles of each set are substantially axially coextensive (Fig. 1).

Regarding claim 7, Nolle also discloses rotary electric motor wherein the rotor comprises a plurality of axial rows of permanent magnets disposed circumferentially along the air gap (Fig. 1 and 2).

Regarding claim 8, Nolle also discloses rotor wherein each axial row comprises a center permanent magnet of one magnetic polarity and, at each axial side thereof, a lateral permanent magnet of a magnetic polarity opposite to the polarity of the center magnet (Fig. 1).

Regarding claim 9, Nolle also discloses rotor wherein the magnetic polarities of the permanent magnets of each successive row in the circumferential direction are of alternate magnetic polarity (Fig. 1).

Regarding claim 21, it is noted that all limitations of the claim has been fulfilled by Nolle in claims 1 and 3.

Regarding claim 22, Nolle also discloses a stator wherein each pole has a pole face surface area extending in the axial and circumferential directions (Fig. 2).

Regarding claim 24, Nolle also discloses a cylindrical annular permanent magnet rotor for a rotary electric motor comprising: a plurality of axial rows of permanent magnets disposed circumferentially about an axis of rotation (Fig. 1 and 2), each axial row comprising a center permanent magnet of one magnetic polarity and, at each axial side thereof, a lateral permanent magnet of a magnetic polarity opposite to the polarity of the center magnet.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nolle in view of Pierson.

Regarding claim 2, Nolle shows all limitations of the claimed invention except showing a rotary electric motor wherein the stator core segments are affixed to a non-ferromagnetic support structure and thereby distributed in the stator ring without ferromagnetic contact with each other.

However, Pierson discloses a rotary electric motor wherein the stator core segments (12 in Fig. 2) are affixed to a non-ferromagnetic support structure (Col. 2, lines 27-40) and thereby distributed in the stator ring without ferromagnetic contact with each other for the purpose of preventing interference of magnetic flux in different segments.

Since Nolle and Pierson are in the same field of endeavor, the purpose disclosed by Pierson would have been recognized in the pertinent art of Nolle.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Nolle by using non-ferromagnetic support structure to affixe the stator core as taught by Pierson for the purpose of preventing interference of magnetic flux in different segments.

5. Claims 4 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolle in view of Torok et al.

Regarding claims 4 and 23, Nolle shows all limitations of the claimed invention except showing a rotary electric motor wherein the surface area of the center pole face of a stator core segment is different from the surface area of a lateral pole face of the respective core segment.

However, Torok et al. disclose a rotary electric motor wherein the surface area of the center pole face of a stator core segment is different from the surface area of a lateral pole face of the respective core segment (Fig. 13b and Col. 13, lines 60-70) for the purpose of optimizing the flux density (Col. 14, lines 40-45).

Since Nolle and Torok et al. are in the same field of endeavor, the purpose disclosed by Torok et al. would have been recognized in the pertinent art of Nolle.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Nolle by making the surface area of the center pole face of a stator core segment is different from the surface area of a lateral pole face of the respective core segment as taught by Torok et al. for the purpose of optimizing the flux density.

6. Claims 10-12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nolle in view of Yamada et al.

Regarding claim 10, Nolle shows a rotary electric motor wherein each of the permanent magnets of the rotor has a surface area at the air gap extending in the axial

and circumferential directions, the surfaces of the magnets of each row being coextensive in the circumferential direction (Fig. 1 and 2).

Nolle fails to show the surface of each permanent magnet of a row being coextensive in the axial direction with the surface area of a corresponding magnet in each of the other rows.

However, Yamada et al. disclose a rotary electric motor wherein the surface of each permanent magnet of a row being coextensive in the axial direction with the surface area of a corresponding magnet in each of the other rows (Fig. 5 and 12) for the purpose of optimizing flux density (Col. 2, lines 25-30).

Since Nolle and Yamada et al. are in the same field of endeavor, the purpose disclosed by Yamada et al. would have been recognized in the pertinent art of Nolle.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Nolle by making the surface of each permanent magnet of a row being coextensive in the axial direction with the surface area of a corresponding magnet in each of the other rows as taught by Yamada et al. for the purpose of optimizing flux density.

Regarding claim 11, Yamada et al. also show a rotary electric motor wherein the length of a center permanent magnet in the axial direction is different from the axial length of a lateral permanent magnet (Fig. 12).

Regarding claim 12, Yamada et al. also show a rotary electric motor wherein the axial length of all lateral permanent magnets are substantially equal and less than the axial length of the center permanent magnets.

7. Claims 13,14,17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolle in view of Yamada et al. and further in view of Heidelberg et al.

Regarding claim 13, the structure disclosed by Nolle, modified by Yamaha et al. shows all limitations of the claimed invention except showing a rotary electric motor wherein the rotor further comprises: a back iron ring (or an outer rim) upon which the permanent magnets are mounted.

However, Heidelberg et al. discloses showing a rotary electric motor wherein the rotor further comprises: a back iron ring (the Examiner interprets magnetic conductive material includes iron as described in Col. 4, lines 40-45) upon which the permanent magnets (8 in Fig. 1) are mounted for the purpose of forming a magnetic return path.

Since Nolle, Yamada et al. and Heidelberg et al. are in the same field of endeavor, the purpose disclosed by Heidelberg et al. would have been recognized in the pertinent art of Nolle and Yamada et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Nolle and Yamaha et al. by using a back iron ring upon which the permanent magnets are mounted as taught by Heidelberg et al. for the purpose of forming a magnetic return path.

Regarding claim 14, Heidelberg et al. also show a rotary electric motor wherein in the back iron ring (20) comprises a continuous ferromagnetic material (the Examiner interprets magnetically conductive material includes ferromagnetic material).

Regarding claim 17, Nolle also shows a rotary electric motor wherein each permanent magnet is a magnetic dipole having one magnetic polarity at a surface at the air gap and the opposite magnetic polarity at a surface facing the back iron ring (Fig. 1).

Regarding claim 18, Heidelberg et al. also show a rotary electric motor wherein adjacent permanent magnets are in contact with each other.

Regarding claim 19, Nolle also shows a rotary electric motor wherein adjacent axial permanent magnet rows are separated from each other.

Regarding claim 20, Nolle also shows a rotary electric motor wherein adjacent permanent magnets of each axial row are separated from each other.

8. Claims 15,16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolle and Yamada et al. in view of Heidelberg et al. and further in view of Burson.

Regarding claim 15, the structure disclosed by Nolle, modified by Yamaha et al. and Heidelberg et al. shows all limitations of the claimed invention except showing a rotary electric motor wherein the back iron ring comprises a plurality of discontinuous segments, each segment having mounted thereon a corresponding axial row of permanent magnets.

However, Burson discloses showing a rotor wherein a back support ring (10 in Fig. 4) upon which the permanent magnets (12) are mounted is segmented by a gap (28) for the purpose of bringing the magnet into tight engagement with a surrounding support ring.

Since Nolle, Yamada et al., Heidelberg et al. and Burson are in the same field of endeavor, the purpose disclosed by Burson would have been recognized in the pertinent art of Nolle, Yamada et al. and Burson.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Nolle, Yamada et al. and Heidelberg et al. by making a back iron ring comprises a plurality of discontinuous segments, each segment having mounted thereon a corresponding axial row of permanent magnets as taught by Burson for the purpose of bringing the magnet into tight engagement with a surrounding support ring.

Regarding claim 16, It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Nolle, Yamada et al. and Heidelberg et al. by forming a back iron segment comprising two separated segment portions, each segment portion bridging the center permanent magnet and a respective lateral permanent magnet of the corresponding axial permanent magnet row as taught by Burson for the purpose of bringing the magnet into tight engagement with a surrounding support ring.

9. Claims 25,28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolle in view of Yamada et al. and further in view of Heidelberg et al.

Regarding claim 25, it is noted that all limitations of the claimed invention has been fulfilled by Nolle, Yamada et al. and Heidelberg et al. as in claim 13.

Regarding claim 28, it is noted that all limitations of the claimed invention has been fulfilled by Nolle, Yamada et al. and Heidelberg et al. as in claim 17.

10. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolle and Yamada et al. in view of Heidelberg et al. and further in view of Burson.

Regarding claim 26, it is noted that all limitations of the claimed invention has been fulfilled by Nolle, Yamada et al., Heidelberg et al. and Burson as in claim 15.

Regarding claim 27, it is noted that all limitations of the claimed invention has been fulfilled by Nolle, Yamada et al., Heidelberg et al. and Burson as in claim 16.

Conclusion

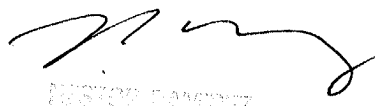
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (703) 305-3466. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

HNN

November 21, 2002



NESTOR RAMIREZ
SUPERVISOR
TECHNICAL DIVISION